

04645.0852

- 2 -

In the Claims:

1. (Currently Amended) An electrochemical cell, which comprises:

- a) a negative electrode comprising of an anode material short circuited with an anode active material consisting essentially of an alkali metal positioned between first and second current collectors, wherein a first anode material contacts the opposite side of the first current collector and a second anode material contacts the opposite side of the second current collector;
- b) a positive electrode of a cathode active material; and
- c) a nonaqueous electrolyte activating the negative electrode and the positive electrode, wherein upon cell activation with the electrolyte, the alkali metal is completely consumed through migration and intercalation into the first and second anode materials ~~material~~.

2. (Canceled)

04645.0852

- 3 -

3. (Currently Amended) The electrochemical cell of claim 1 wherein the first and second anode material are material ~~is~~ selected from the group consisting of a carbonaceous material, SnO, SnO₂, SiO, tin-boron-phosphorous oxide, V₂O₅, silver vanadium oxide, copper silver vanadium oxide, MnO₂, TiS₂, CuO₂, Cu₂S, FeS, FeS₂, CF_x, Ag₂O, Ag₂O₂, CuF, Ag₂CrO₄, copper oxide, copper vanadium oxide, and mixtures thereof.

4. (Previously Presented) The electrochemical cell of claim 3 wherein the carbonaceous material is selected from the group consisting of coke, graphite, acetylene black, carbon black, glassy carbon, hairy carbon, non-graphitizable carbon, and mixtures thereof.

5. (Currently Amended) The electrochemical cell of claim 1 wherein the negative electrode has the configuration: first anode material/first current collector/alkali metal/second current collector/second anode material; wherein the first and second anode materials are capable of intercalating and de-intercalating the alkali metal and are the same or different.

6. (Currently Amended) The electrochemical cell of claim 1 wherein the negative electrode has the configuration: first anode material/first current collector/third ~~second~~ anode material/alkali metal/fourth ~~third~~ anode material/second current collector/second ~~fourth~~ anode material, wherein the first, second, third and fourth anode materials are capable of intercalating and de-

04645.0852

- 4 -

intercalating the alkali metal and are either the same or different.

7. and 8. (Canceled)

9. (Currently Amended) The electrochemical cell of claim 1 wherein the first and second anode materials are ~~material is~~ non-graphitizable carbon and the negative electrode has the configuration: non-graphitizable carbon/first current collector/lithium/second current collector/non-graphitizable carbon.

10. (Canceled)

11. (Currently Amended) The electrochemical cell of claim 1 wherein the anode materials are ~~material is~~ non-graphitizable carbon and the negative electrode has the configuration: non-graphitizable carbon/first current collector/non-graphitizable carbon/lithium/non-graphitizable carbon/second current collector/non-graphitizable carbon.

12. (Currently Amended) The electrochemical cell of claim 1 wherein the first and second anode materials are of ~~material is~~ a carbonaceous material and the negative electrode has the configuration: carbonaceous material/first current collector/lithium/second current collector/carbonaceous material.

04645.0852

- 5 -

13. (Previously Presented) The electrochemical cell of claim 1 wherein the cathode active material is selected from the group consisting of $\text{Li}_x\text{Ti}_5\text{O}_{12}$ ($x = 4$ to 7), $\text{Li}_{3-x}\text{M}_x\text{N}$ ($\text{M} = \text{Co}, \text{Ni}; x = 0.1$ to 0.6), LiNiO_2 , LiMn_2O_4 , LiMnO_2 , LiV_2O_5 , LiCoO_2 , $\text{LiCo}_{0.92}\text{Sn}_{0.08}\text{O}_2$, lithium cobalt nickel oxide, silver vanadium oxide, copper silver vanadium oxide, V_2O_5 , MnO_2 , CuO_2 , TiS_2 , Cu_2S , FeS , FeS_2 , copper oxide, copper vanadium oxide, CF_x , Ag_2O , Ag_2O_2 , CuF , Ag_2CrO_4 , and mixtures thereof.

14. (Original) The electrochemical cell of claim 1 wherein the positive electrode includes non-active materials selected from a binder material and a conductive additive.

15. (Original) The electrochemical cell of claim 14 wherein the binder material is a fluoro-resin powder.

16. (Original) The electrochemical cell of claim 14 wherein the conductive additive is selected from the group consisting of carbon, graphite powder, acetylene black, titanium powder, aluminum powder, nickel powder, stainless steel powder, and mixtures thereof.

04645.0852

- 6 -

17. (Currently Amended) An electrochemical cell, which comprises:

- a) a positive electrode of a cathode active material;
- b) a negative electrode of ~~an anode material and an anode active material consisting essentially of~~ an alkali metal, ~~wherein the alkali metal is a structure having spaced apart first and second major sides~~ positioned between first and second current collectors, wherein a first anode material contacts the opposite side of the first current collector and a second anode material contacts the opposite side of the second current collector, with at least one current collector contacting at least one of the first and second major sides and wherein the anode material is contacted to the at least one current collector opposite the alkali metal and facing the positive electrode, and wherein the first and second anode materials are material is capable of intercalating and de-intercalating the alkali metal; and
- c) a nonaqueous electrolyte activating the negative electrode and the positive electrode, wherein upon cell activation with the electrolyte, the alkali metal is completely consumed through migration and intercalation into the first and second anode materials ~~material~~.

04645.0852

- 7 -

18. (Currently Amended) The electrochemical cell of claim 17 wherein the negative electrode ~~comprises first and second current collectors and~~ has the configuration: first anode material/first current collector/alkali metal/second current collector/second anode material, wherein the first and second anode materials are capable of intercalating and de-intercalating the alkali metal and are the same or different.

19. (Currently Amended) The electrochemical cell of claim 17 wherein at least one of the first and second anode materials ~~material~~ is a carbonaceous material and the negative electrode ~~comprises first and second current collectors and~~ has the configuration: carbonaceous material/first current collector/lithium/second current collector/~~carbonaceous~~ second anode material.

20. (Currently Amended) The electrochemical cell of claim 17 wherein at least one of the first and second anode materials ~~material~~ is non-graphitizable carbon and the negative electrode ~~comprises first and second current collectors and~~ has the configuration: non-graphitizable carbon/first current collector/lithium/second current collector/second anode material ~~non-graphitizable carbon~~.

04645.0852

- 8 -

21. (Currently Amended) The electrochemical cell of claim 17 wherein the first and second current collectors are ~~collector is~~ selected from the group consisting of copper, stainless steel, titanium, tantalum, platinum, gold, aluminum, cobalt nickel alloys, highly alloyed ferritic stainless steel containing molybdenum and chromium, and nickel-, chromium-, and molybdenum-containing alloy.

22. (Original) The electrochemical cell of claim 17 wherein the electrolyte has a first solvent selected from an ester, a linear ether, a cyclic ether, a dialkyl carbonate, and mixtures thereof, and a second solvent selected from a cyclic carbonate, a cyclic ester, a cyclic amide, and mixtures thereof.

23. (Previously Presented) The electrochemical cell of claim 22 wherein the first solvent is selected from the group consisting of tetrahydrofuran, methyl acetate, diglyme, triglyme, tetraglyme, dimethyl carbonate, 1,2-dimethoxyethane, 1,2-diethoxyethane, 1-ethoxy,2-methoxyethane, ethyl methyl carbonate, methyl propyl carbonate, ethyl propyl carbonate, diethyl carbonate, dipropyl carbonate, and mixtures thereof, and the second solvent is selected from the group consisting of propylene carbonate, ethylene carbonate, butylene carbonate, acetonitrile, dimethyl sulfoxide, dimethyl formamide, dimethyl acetamide, γ -valerolactone, γ -butyrolactone, N-methyl-pyrrolidinone, and mixtures thereof.

04645.0852

- 9 -

24. (Original) The electrochemical cell of claim 17 wherein the electrolyte includes a lithium salt selected from the group consisting of LiPF_6 , LiBF_4 , LiAsF_6 , LiSbF_6 , LiClO_4 , LiO_2 , LiAlCl_4 , LiGaCl_4 , $\text{LiC}(\text{SO}_2\text{CF}_3)_3$, $\text{LiN}(\text{SO}_2\text{CF}_3)_2$, LiSCN , LiO_3SCF_3 , $\text{LiC}_6\text{F}_5\text{SO}_3$, LiO_2CCF_3 , LiSO_6F , $\text{LiB}(\text{C}_6\text{H}_5)_4$, LiCF_3SO_3 , and mixtures thereof.

25. (Previously Presented) The electrochemical cell of claim 17 wherein the electrolyte is of a lithium salt dissolved in a mixture of ethylene carbonate, dimethyl carbonate, ethyl methyl carbonate and diethyl carbonate.

26. to 29. (Canceled)

30. (Previously Presented) An electrochemical cell, which comprises:

- a) a positive electrode of a cathode active material;
- b) a negative electrode of an alkali metal sandwiched between a first and second current collectors with an anode material selected from the group consisting of SnO , SnO_2 , SiO , tin-boron-phosphorous oxide, a carbonaceous material, V_2O_5 , silver vanadium oxide, copper silver vanadium oxide, MnO_2 , TiS_2 , CuO_2 , Cu_2S , FeS , FeS_2 , CF_x , Ag_2O , Ag_2O_2 , CuF , Ag_2CrO_4 , copper oxide, copper vanadium oxide, and mixtures thereof, contacted to at least one of the first and second current collectors opposite the

04645.0852

- 10 -

alkali metal and facing the positive electrode;
and

- c) a nonaqueous electrolyte activating the negative electrode and the positive electrode.

31. (Currently Amended) A method for providing an electrochemical cell, comprising the steps of:

- a) providing a positive electrode ~~of an anode~~ active material consisting essentially of a cathode active material capable of intercalating and deintercalating an alkali metal;
- b) providing a negative electrode ~~of~~ comprising an the alkali metal positioned between first and second current collectors, wherein a first anode material contacts the opposite side of the first current collector and a second anode material contacts the opposite side of the second current collector ~~short circuited with an anode material~~; and
- c) activating the negative electrode and the positive electrode with a nonaqueous electrolyte, wherein upon cell activation with the electrolyte, the alkali metal is completely consumed through migration and intercalation into the first and second anode materials material.

04645.0852

- 11 -

32. (Currently Amended) The method of claim 31 including providing the negative electrode having the configuration: first anode material/first current collector/alkali metal/second current collector/second anode material, wherein the first and second anode materials are capable of intercalating and de-intercalating the alkali metal and are the same or different.

33. (Currently Amended) The method of claim 31 including providing the negative electrode having the configuration: first anode material/first current collector/third ~~second~~ anode material/alkali metal/fourth ~~third~~ anode material/second current collector/second ~~fourth~~ anode material, wherein the first, second, third and fourth anode materials are capable of intercalating and de-intercalating the alkali metal and are either the same or different.

34. (Canceled)

35. (Currently Amended) The method of claim 31 including providing at least one of the first and second anode materials ~~material~~ as non-graphitizable carbon with the negative electrode having the configuration: non-graphitizable carbon/first current collector/lithium/second current collector/second anode material ~~non-graphitizable carbon~~.

36. (Canceled)

04645.0852

- 12 -

37. (Currently Amended) The method of claim 31 including providing at least one of the first and second anode materials ~~material~~ as a carbonaceous material with the negative electrode having the configuration: carbonaceous material/first current collector/lithium/second current collector/~~carbonaceous~~ second anode material.

38. (Currently Amended) The method of claim 31 including selecting the first and second anode materials ~~material~~ from the group consisting of SnO, SnO₂, SiO, tin-boron-phosphorous oxide, a carbonaceous material, V₂O₅, silver vanadium oxide, copper silver vanadium oxide, MnO₂, TiS₂, CuO₂, Cu₂S, FeS, FeS₂, CF_x, Ag₂O, Ag₂O₂, CuF, Ag₂CrO₄, copper oxide, copper vanadium oxide, and mixtures thereof.

39. (Original) The method of claim 38 including selecting the carbonaceous material from the group consisting of coke, graphite, acetylene black, carbon black, glassy carbon, hairy carbon, hard carbon, and mixtures thereof.